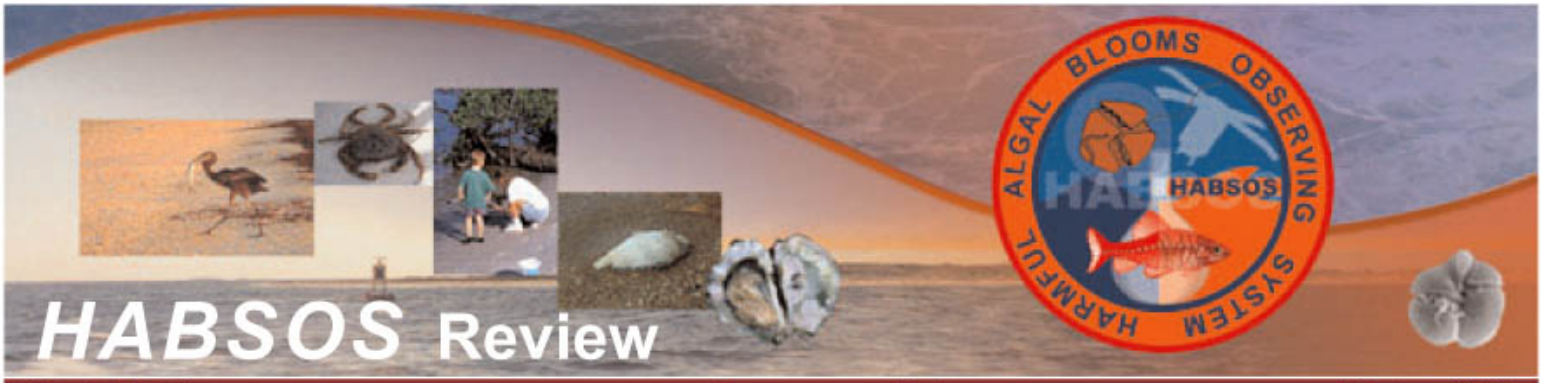

HABSOS Review

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In "The State of the Nation's Ecosystems", the Heinz Center identified harmful algal blooms (HABs) as one of the core indicators to the health of the nation's ecosystems. Alarmingly, the frequency, extent, and severity of HAB events appear to be increasing. Although these occurrences can have significant economic and ecological effects, there are no consistent and comprehensive national data to validate this concern.

The Harmful Algal Blooms Observing System (HABSOS) pilot project is a multi-agency proof-of-concept demonstration of an integrated information and communication system for managing HAB data, events, and effects. The HABSOS pilot project is initially focused on the Gulf of Mexico but has begun expansion throughout the Coastal U.S. and the gulf states of Mexico.

Welcome to the premier edition of *HABSOS Review*, a quarterly update on the Harmful Algal Blooms Observing System project, co-sponsored by the EPA's Gulf of Mexico Program Office (GMPO) and NOAA's National Coastal Data Development Center (NCDDC). HABSOS is being developed through an extensive partnership of over thirty federal, state, industry and academic organizations as a proof-of-concept for a coastal observing system in the Gulf of Mexico.

To be successful, HABSOS will require an unprecedented level of cooperation, much of it being done on a volunteer basis. We believe a key to continued involvement of the HABSOS partners and participants is communication. Hence, the quarterly HABSOS Review was created.

As you will see in this issue, HABSOS is quite active, technically and politically, and there are a number of diverse initiatives ongoing. In future issues, we'll address other efforts within the Gulf that are relevant to HABSOS. In addition, we hope to showcase our partners and participants and provide them a forum to describe their mission and involvement in HABSOS and where they'd like to see the project go.

In closing, this quarterly, like the overall HABSOS project, is constantly evolving and totally interactive. Any ideas for improvements, article contributions or anything else you would like addressed will always be welcome. Let us hear from you!

Coming Events — Habwatch

Of interest to HABSOS, the "Real-time coastal observing systems for ecosystem dynamics and harmful algal blooms" workshop will be convened on 11-21 June 2003 at the Observatoire Océanologique and Citadelle of Villefranche-sur-Mer, France. Interest is high throughout the world in the installation of ocean observation systems to provide the data and knowledge needed to detect and forecast physical, chemical and biological changes in coastal and open-ocean ecosystems. The purpose of the workshop is to explore recent advances in instrumentation, communications and modeling capabilities that are leading to the design of prototype real-time observation and prediction systems for coastal ecosystems.

The workshop was initially recommended by the Working Group on Harmful Algal Blooms Dynamics of ICES (International Council for the Exploration of the Sea), and the plan is supported by GEOHAB (Global Ecology and Oceanography of Harmful Algal Blooms; IOC and SCOR), and the Coastal Ocean Observing Panel (COOP) of the Global Ocean Observing System (GOOS). For more information visit http://www.habwatch.org/

CHANGE IN HABSOS STEERING COMMITTEE

Bryon Griffith

In October 2002, Jim Giattina, former Director of the Gulf of Mexico Program Office and member of the HABSOS Steering Committee, said farewell and is now serving as the Water Management Division Director at EPA, Region 4, located in Atlanta, Georgia. Bryon Griffith, serving as the GMPO's Acting Director and replacing Jim on the HABSOS Steering Committee, commented "Jim has left a lasting impact on the Gulf of Mexico Program. The management practices he put into effect have improved the Program's efficiency and accountability to our partnership and the stakeholders we serve. There is an immediate need to make more effective use of existing resources and new technologies to provide more timely detection and prediction of harmful algal marine resources. Jim saw this need and was an initial champion of HABSOS as a means for doing this. I will continue as an advocate and will spur the coordination of efforts to set in place the successful implementation of a HAB forecasting system for the Gulf of Mexico."

US-Mexico HAB Collaboration

On December 9-10, 2002, Bryon Griffith and Tim Orsi attended the VI Gulf of Mexico States Accord in Tampa, FL, to brief the Health, Ecology and Environmental Protection Working Group. Interest in HABSOS was high and both countries agreed to explore ways of collaborating on the HAB issue. The GMP is initiating a binational cooperation with the state of Veracruz, Mexico by organizing a coordination workshop. The proposed outcome of this meeting will be to identify short, medium and long-term opportunities for collaboration on the environmental management of the Gulf of Mexico with an initial focus on integrating HAB descriptive and predictive monitoring systems.

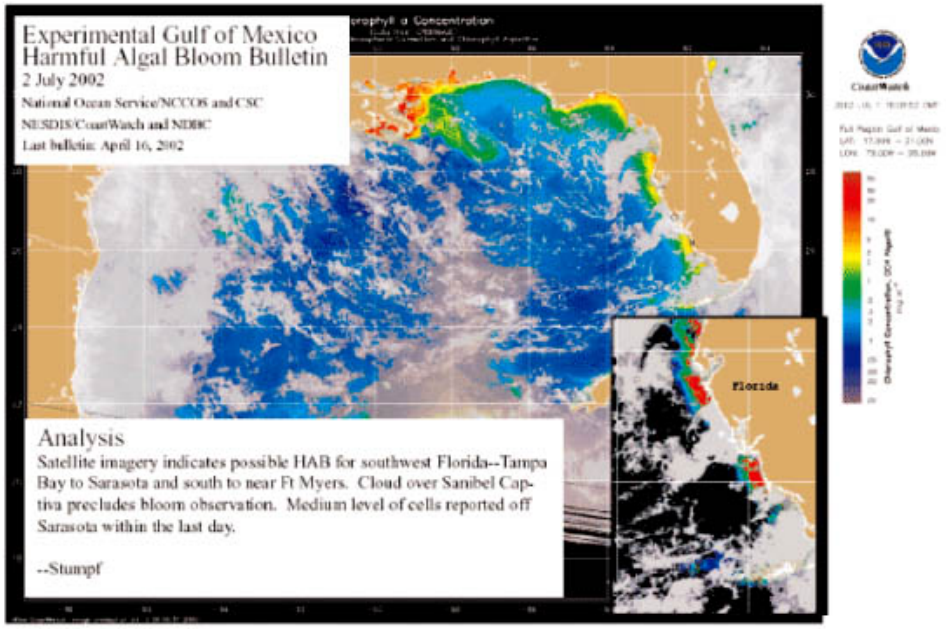
Streamlining Data Entry

In compiling the *Karenia brevis* cell counts from the various HABSOS Case Study participants, it became apparent that a process would be needed to streamline data flow so that cell count data could be quickly ingested into HABSOS. This critical issue also extends to other important data types such as aquatic mortality and must be resolved if HABSOS is to evolve into a fully operational real-time system.

With that in mind, a HAB Data Entry Tool has been designed by Xavier University's Dr. Letatia Ducksworth, an NCDDC IPA. Letatia evaluated the schemas for cell count entry of Florida Marine Research Institute (FMRI), Dauphin Island Sea Lab (DISL), and NOAA's National Oceanographic Data Center (NODC) and designed an application that captured the data fields most common to all. During the Christmas holidays, Alyssa Bennett, one of NCDDC's summer interns, returned to assist Jeanne Allen with refining the data entry tool and making cosmetic changes. Version 1.0 has been completed and is being distributed to HABSOS users for evaluation.

For more information or comments about the HAB Data Entry Tool, please contact either Tim or Jeanne at 228-688-3908 or 228-688-2896, respectively.

HAB Forecast Bulletin



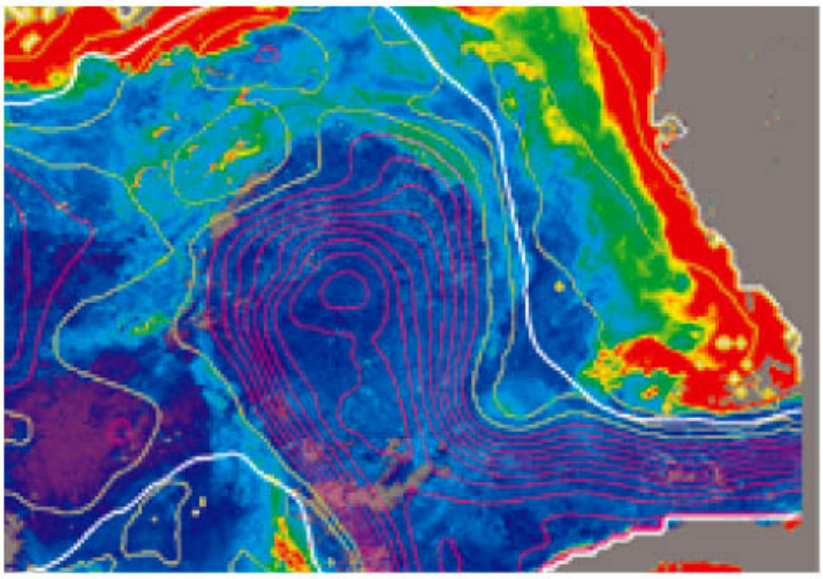
The Gulf of Mexico states have hundreds of miles of coastline that is suitable habitat for shellfish but is also subject to occasional blooms of the toxic algae Karenia brevis, which causes neurotoxic shellfish poisoning. Monitoring this coast for the presence of red tide is critical to regulating shellfish harvest areas and protecting public health.

A cooperative effort of the NOAA National Ocean Service, CoastWatch, and agencies in the Gulf States has resulted in the Experimental Harmful Algal Bloom Bulletin, a product designed to allow agencies to more efficiently allocate resources needed to monitor water quality and to prepare for the impacts of a red tide. The bulletin contains chlorophyll concentrations derived from SeaWiFS imagery to provide a regional view of algal blooms, the last known position of the bloom, and wind speed and direction to track bloom movement. Recently, areas demarcating the locations of probable K. brevis blooms have been added to the bulletins to more accurately identify the extent and distribution of new and existing blooms. When conditions are changing, the bulletin is e-mailed as a portable document file (PDF) to agencies with resource management responsibilities.

The bulletin has been used since 2000 to help direct sampling efforts in the Gulf. It is continually evolving to incorporate new techniques and information to assist in the monitoring and prediction of bloom movement and development in this region. For more information, please contact Dr. Rick Stumpf (Richard.Stumpf@noaa.gov) or Dr. Mary Culver (Mary.Culver@noaa.gov).

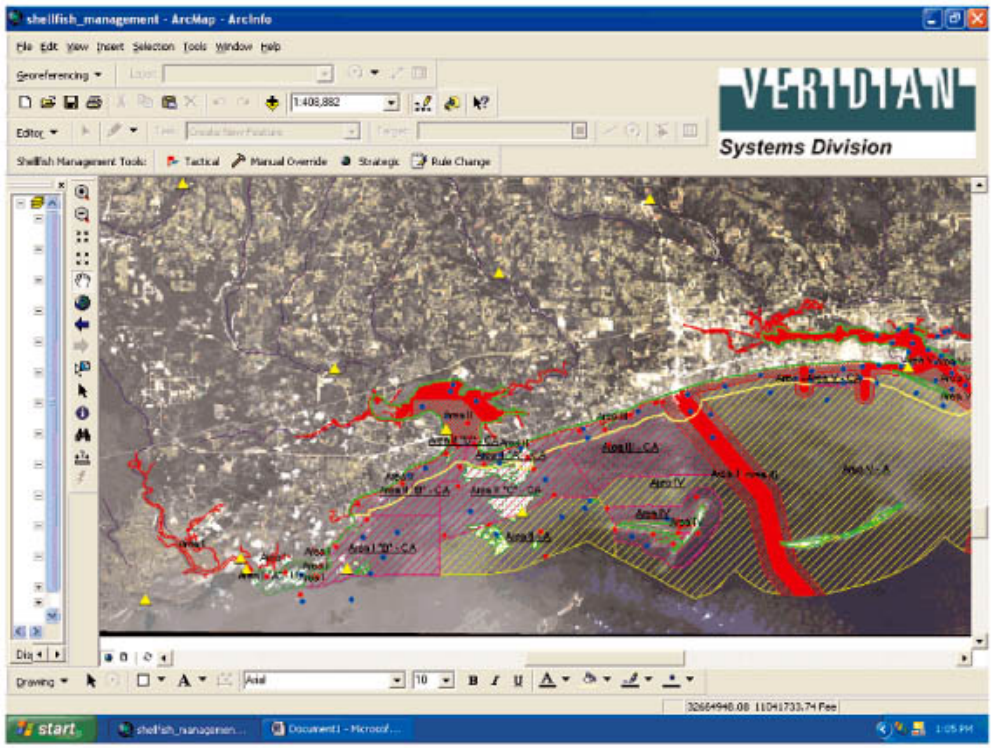
CASE group joins HABSOS

The Climatology and Simulation of Eddies Project (CASE) has joined HABSOS's ongoing efforts in developing an early warning/forecasting system for HAB events in the Gulf of Mexico. CASE, a joint Industry project founded in 1991 and administered by Marathon Oil Company, has historical simulations and nowcast/forecasts of the Loop Current and its associated eddies using the CASE/University of Colorado POM model (CUPOM). Subject to the terms of a confidentiality agreement reached between Marathon and NCDDC, CASE will provide HABSOS access to project results to aid our proof of concept demonstration. This will include access to the long-term simulations of the Gulf driven by satellite altimetry and access to nowcast/forecasts. In the central gulf, the model can predict the location of the major fronts to within 10 km in nowcast mode with small errors in currents. In turn, HABSOS's analysis of the simulations, testing of harmful algal bloom prediction system and comparison to observational data will provide another level of validation for the CUPOM simulations.

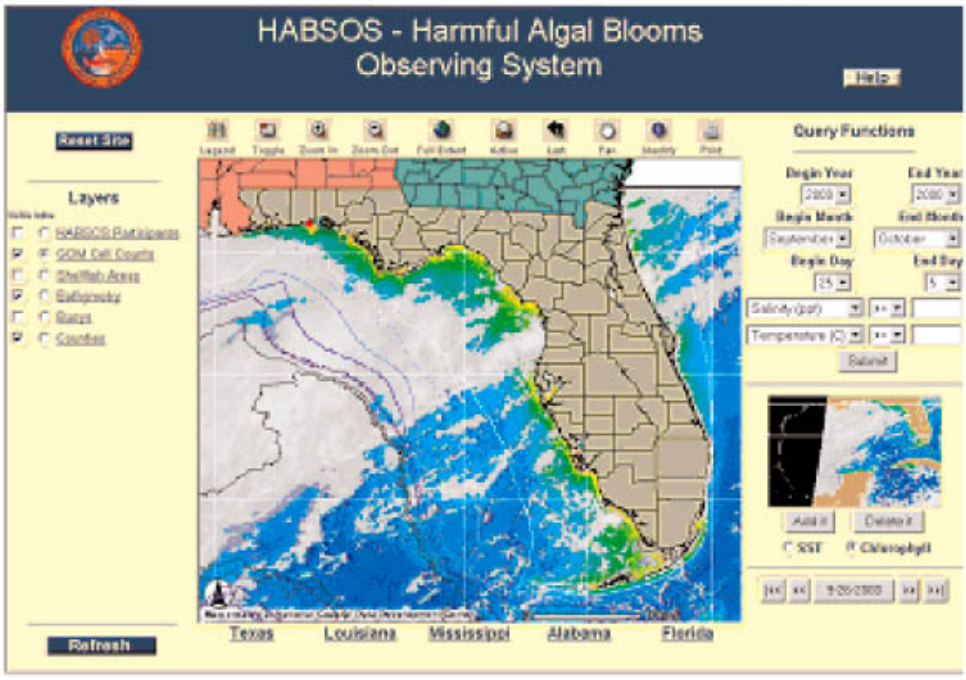


Shellfish Management

One of the advantages of NCDDC having multiple ongoing projects is the ability to leverage development across projects. NCDDC's philosophy is simple: build once – use many. An excellent example is the shellfish management tool being developed by Jackson State University (JSU) and Veridian Inc. for Mr. Scott Gordon, Mississippi Department of Marine Resources (DMR), under the NCDDC's Coastal Risk Atlas pilot project.



HABSOS is presently ingesting the shellfish management tool which provides an operational environment that monitors, in near real-time, the rain gauge, fecal coliform and river stage data needed to manage the shellfish harvesting areas in the Mississippi Sound. This decision support tool notifies DMR when the harvesting areas should be opened or closed. Visualization is achieved by integrating GIS application, satellite imagery and vector layers to display current statuses of all shellfish management areas. Our goal is to incorporate additional decision rules for HAB management and expand the tool to the other Gulf states. Admittedly, each state's approach to ecosystem management is unique so by necessity, HABSOS will develop this comprehensive management capability for the Gulf of Mexico on a state-by-state basis. Please contact Dr. Paulinus Chigbu (JSU) or Mr. Tom Strange (Veridian) for more information.



HABSOS ArcIMS

The HABSOS ArcIMS application has completed yet another stage in its development. The version currently available on the web site is a public version for all to see. All values for the cell counts are the aggregate values. The version with the actual values will soon be located in the Data Management menu on the website.

The latest version has the range

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ArcIMS

Cont. from page 4

time series model incorporated with imagery. Other queries include dissolved oxygen, temperature, and salinity. A user can view imagery for a particular date by simply clicking the "Add It" button to add the image to the view.

Take a stroll through the site, use the query functions, step through an event day by day, and use the imagery for a particular date. See what results you can determine from using the HABSOS ArcIMS application.

HABSOS Review

HABSOS Review will be published quarterly by the EPA's Gulf of Mexico Program Office and NOAA's National Coastal Data Development Center.

You can keep up to date on Gulf Coast HAB issues through the HABSOS web site www.ncddc.noaa.gov/habsos.

Cover photograph supplied by the U.S. Naval Oceanographic Office.

Editors:

Tim Orsi. Ph.D.
Planning Systems Inc.
Tim.Orsi@noaa.gov
228-688-3908

Larinda Tervelt
Tervelt.Larinda@epa.gov
228-688-1033

If you'd like to be included on our mailing list or share ideas for future newsletter articles, please contact us. The *HABSOS Review* is evolving so your input is critical.

HABSOS Organization

Over thirty federal, state, local, academic and industry organizations are presently collaborating on HABSOS.

Organizationally, GMPO's Bryon Griffith is the administrative lead for HABSOS, Dr. Rick Greene, EPA Gulf Breeze, is the technical lead, and Dr. Tim Orsi (Planning Systems Inc./NCDDC) is heading up the web portal and observing system design and development. Members of the HABSOS Steering Committee include:

Dr. Madilyn Fletcher, University of South Carolina
Dr. Ken Tenore, Chesapeake Biological Laboratory
Mr. Bryon Griffith, EPA/GMPO
Mr. Joe Stinus, NOAA/NCDDC
Dr. John Meyer, Commander, Naval Meteorology and Oceanography Command
Dr. Dave Remsen, WHOI's Marine Biological Laboratory
Dr. Tom Malone, Oceans.US and University of Maryland
Dr. Mary Culver, NOAA Coastal Services Center
Dr. Larry McKinney, Texas Parks and Wildlife Department
Dr. Ken Haddad, Florida Fish and Wildlife Conservation Commission

Members of the HABSOS Case Study Working Group include:

Dr. Rick Greene, EPA Gulf Breeze
Dr. Bill Fisher, EPA Gulf Breeze
Dr. Karen Steidinger, Florida Marine Research Institute
Dr. Quay Dortch, LUMCON
Dr. Cynthia Moncreiff, University of Southern Mississippi
Dr. Jon Pennock, University of New Hampshire
Dr. Jim Simons, Texas Parks and Wildlife Department
Dr. Rick Stumpf, NOAA National Ocean Service
Dr. Tracy Villareal, University of Texas
Ms. Keri Duvall, Dauphin Island Sea Lab
Dr. Tim Orsi, Planning Systems Inc./NOAA/ NCDDC
Ms. Jeanne Allen, Planning Systems Inc./NOAA/ NCDDC
Dr. Sonia Gallegos, Naval Research Laboratory
Ms. Larinda Tervelt, EPA/GMPO